System aspects of the present invention are commensurate with the method aspects.--.

Page 176, replace line 9 as follows: --from the tag, by a simple dedicated 1×1 switching circuitry which is appended to every--.

Page 178, replace line 13 as follows: --10 ('0-bound') $\prec$ 00 ('idle') $\prec$ 11 ('1-bound').--.

Page 180, replace line 18 as follows: --of a bit-permuting network. The routing tag for the particular $2^n \times 2^n$ networks studied in the prior--.

Page 181, replace line 1 as follows: --art is the destination address $d_1d_2 \ldots d_n$ of a packet plus possibly an activity bit up front. By--.

Page 196, replace line 13 as follows: --possible number of 1-bound signals to the 1-output group. For a 2b-to-b concentrator--.

Page 196, replace line 17 as follows: --concentrator composed of interconnected routing cells meets this criterion perfectly for--.

Page 197, replace line 4 as follows: --banyan-type network. The 2b-to-b concentrator composed of interconnected routing--.

Page 197, replace lines 15-16 as follows: --concentrator composed of interconnected routing cells can be substituted by a 2b-to-b concentrator composed of interconnected 0-1 sorting cells. The same applies throughout--.

Page 198, replace line 10 as follows: --a 2b-to-b concentrator composed of interconnected routing cells. The hybrid network--.

Page 198, replace line 13 as follows: --of routing cells, and the in-band control signal of a packet changes only between--.

Page 199, replace line 5 as follows: --for $1 \leq j \leq n$, the in-band control signal to a concentrator in the j^{th} super-stage is $1d_{\gamma(j)}$.--.

Page 201, replace line 8 as follows: --A concentrator composed of interconnected routing cells is a--.

Page 207, replace line 13 as follows: --100101, 100111, 101101, and 101111, so this is a 3-dimentional rectangle. The number of--.

Page 211, replace line 2 as follows: --$p_1 \ldots p_r$ serves as the tiebreaker when the two packets arrived at the same cell are both 0-bound or both 1-bound.--.

Page 213, replace line 18 as follows: --super-stage. Note that if $\gamma(p) = \gamma(q)$ in the guide of the network, where $p<q$, the q-th symbol of the routing tag $Q_{\gamma(q)}$ will repeat the p-th symbol $Q_{\gamma(p)}$, when $Q_{\gamma(p)} = Q_{\gamma(q)}$ = 'bicast', the packet may be bicasted at stage-p and then be bicasted again at stage-q such that undesired extra copies of the packet will be produced. Therefore, whenever $\gamma(p) = \gamma(q)$ in the guide of the network, the bicasting function of the whole stage of switching nodes at either stage-p or stage-q should be disabled to prevent such situation. The remaining parts of the control coincide with the above.--.

Page 227, insert the following lines after line 5:

--For example, for a $2^6 \times 2^6$ banyan-type network with the guide being 5, 4, 6, 1, 3, 2, if the destination addresses of a multicast packet in this network comprise 001010 (address 1), 011001 (address 2) and 110101 (address 3), for address 1 where $d_1d_2d_3d_4d_5d_6 = 001010$, that is, $d_1=0$, $d_2=0$, $d_3=1$, $d_4=0$, $d_5=1$, and $d_6=0$, then

$d_{\gamma(1)}d_{\gamma(2)}d_{\gamma(3)}d_{\gamma(4)}d_{\gamma(5)}d_{\gamma(6)} = d_5d_4d_6d_1d_3d_2 = 100010$ is a guiding sequence of this packet; for address 2 where $d_1d_2d_3d_4d_5d_6 = 011001$, $d_{\gamma(1)}d_{\gamma(2)}d_{\gamma(3)}d_{\gamma(4)}d_{\gamma(5)}d_{\gamma(6)} = d_5d_4d_6d_1d_3d_2 = 001011$ is also a guiding sequence of this packet; for address 3 where $d_1d_2d_3d_4d_5d_6 = 110101$, $d_5d_4d_6d_1d_3d_2 = 011101$ is another guiding sequence of this packet.--.

Page 227, replace line 17 as follows: --associated with longer strings. Among symbols associated with equally long strings,--.

Page 228, replace lines 3-4 as follows: --sequence $\gamma(1), \gamma(2), \ldots, \gamma(n)$. By definition, $d_{\gamma(1)}d_{\gamma(2)}\ldots d_{\gamma(n)}$ is a guiding sequence of a packet when the destination addresses of that packet include the address $d_1d_2\ldots d_n$. The--.

Page 228, replace line 13 as follows: --leading quaternary symbol of one of the two packets arrived at the bicast cell is 'bicast' and that of the other packet is 'idle', then--.

Page 228, replace line 17 as follows: --describes the switching control over a single bicast cell. Meanwhile, in accordance with the present invention, there is also the--.

Page 229, replace line 7 as follows: --

$Q_0□Q_{00}□Q_{01}□Q_{000}□Q_{010}□Q_{001}□Q_{011}□Q_{0000}□\ldots$--.

Page 229, replace line 11 as follows: --

$Q_1□Q_{10}□Q_{11}□Q_{100}□Q_{110}□Q_{101}□Q_{111}□Q_{1000}□\ldots$--.

Page 229, replace lines 13-14 as follows: --quaternary symbol starting with the second real symbol in the routing tag, while a packet routed to output-1 of a stage-j cell retains only every other real quaternary symbol starting with the--.

Page 229, replace lines 15-16 as follows: --third real symbol in the routing tag. Note that space fillers are not regarded as real quaternary symbols. Again, space fillers replace those non-retained symbols in order to maintain the--.

Page 230, replace lines 1- 4 as follows:

--Q_{00}□□□Q_{000}□□□Q_{001}□□□Q_{0000}□□□...

Q_{01}□□□Q_{010}□□□Q_{011}□□□Q_{0100}□□□...

Q_{10}□□□Q_{100}□□□Q_{101}□□□Q_{1000}□□□...

Q_{11}□□□Q_{110}□□□Q_{111}□□□Q_{1100}□□□...--.

Page 230, replace line 13 as follows: --101, and 111, of an 8×8 banyan network **(7600)**. The coding of the destination addresses--.

Page 230, replace line 15 as follows: --follows. The quaternary symbols '0-bound', '1-bound', 'idle', and 'bicast' are abbreviated as 0,--.

Page 231, replace line 1 as follows: --the first packet are 000 and 011, and those for the second packet are 010, 100, 101, and 111.--.

Page 231, replace line 2 as follows: --For the first packet, the first symbol $Q_{\_}$ in the routing tag is 0 because, according to the rules of the--.

Page 231, replace line 5 as follows: --but S1 = "1" is not a prefix of any guiding sequence of the first packet, the condition for the case Q_S =--.

Page 231, replace line 12 as follows: --its leading symbol is "0" and the other input of the cell is idle, the cell sets its connection--.

Page 232, replace lines 1-2 as follows: -- the output-0 retains every other real quaternary symbol starting with the second real symbol in the routing tag "B□0□1□" **(7612)**, "0", and thus gives the new routing tag "0□□□" **(7613)**, while the copy of the

packet at the output-1 retains every other real quaternary symbol starting with the third real symbol in the routing tag "B□0□1□" (7612), "1", and thus gives the new routing tag "1□□□"--.

Page 233, replace line 1 as follows: --Section F) associated with the n-leaf rightist tree. Take the first recursive step in such a--.

Page 234, replace line 9 as follows: --converted into a construction of a self-routing switch that is "nonblocking in the--.

Page 234, replace line 17 as follows: --multicast mechanism toward an arbitrary set of output addresses as described in the sub-section J1 is ported--.

Page 238, replace line 15 as follows: --The intuitive design of the switching element in the existing art usually has all the $\log_2 m$ bits--.

Page 239, replace lines 5-9 as follows: -- and output ports.--.

Page 239, insert the following lines before line 15:

-- Assume that the switching element needs R_j bits from each of the two input packets in order to determine the j^{th} output bit at both of the output ports. Then, the local buffering delay is $max_j\{R_j-j\}$. Because of the local switching delay, the total local delay incurred at the 2×2 switching element may turn out to be, for example, $max_j\{R_j-j\}+\varepsilon$, where $0<\varepsilon\leq 1$.--.

Page 240, replace line 11 as follows: --When the two input packets to the bicast cell are a bicast packet and an idle--.

Page 242, replace line 11 as follows: --Therefore, $R_1 = 2$ and hence the local buffering delay $max_j\{R_j-j\} \geq R_1-1 = 1$ under such--.

Page 244, replace line 16 as follows: --The method to achieve local buffering delay in the bicast cell is described case by case.--.

Page 247, replace lines 4-5 as follows: --FIG. 80 shows the case for $I_1 = 10$, which is symmetric to Case 1. $O_1 = 01$ again in this case. It will be shown that $O_1 = 01$ is also always correct no matter which of the four--.

Page 249, replace line 5 as follows: --connection state. In some implementations, all of the remaining bits may be used as the--.

Page 249, replace line 7 as follows: --Case 3.3: $I_2 = 10$ **(81300)**--.

Page 249, replace lines 8-9 as follows: --The input packets at input-0 and input-1 are respectively '0-bound' and 'idle'. Therefore, the connection state is set to bar and latched **(81301)**, and $O_2 = 10$.--.

Page 249, replace line 10 as follows: --Case 3.4: $I_2 = 01$ **(81400)**--.

Page 249, replace lines 8-9 as follows: --The input packets at input-0 and input-1 are respectively 'idle' and '0-bound'. Therefore, the connection state is set to cross and latched **(81401)**, and $O_2 = 10$.--.

Page 250, replace line 9 as follows: --Case 4.3: $I_2 = 10$ **(82300)**--.

Page 250, replace line 11 as follows: --Therefore, the connection state is set to cross and latched **(82301)**, and $O_2 = 01$.--.

Page 250, replace line 12 as follows: -- Case 4.4: $I_2 = 01$ **(81400)**--.

Page 250, replace line 14 as follows: --Therefore, the connection state is set to bar and latched **(82401)**, and $O_2 = 01$.--.

Page 250, replace line 17 as follows: --coding scheme given in Table 2. The four entries, "00", "01", "11" and "10" in the right--.

Page 251, replace line 14 as follows: --approximately the same proportion. When comparing the two examples elucidated above, which respectively adopting an arbitrary coding scheme with deficiency and the new coding scheme in accordance with the present invention, the difference between 1 and 0 in the local buffering delay per 2×2 switching element accumulates in a network composed of many stages of 2×2 switching elements.--.

<u>In the Claims:</u>

Please add claims 3-6 as follows:

--3. The method as recited in claim 1 wherein

each one of the switching elements is a routing cell,

the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types wherein each one of the packet types corresponds to a distinct in-band control signal,

the coding includes coding each of the in-band control signals by at least two bits, and

the coding algorithm includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.

4. A system for routing packets comprising

multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions,

an encoder for coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding algorithm, and

a generator for generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element.

5. The system as recited in claim 4 wherein

each one of the switching elements is a bicast cell,

the local input packets to each one of the switching elements includes idle, 0-bound, 1-bound and bicast packet types wherein each one of the packet types corresponds to a distinct in-band control signal, and

the encoder includes means for coding each of the in-band control signals by at least two bits and the coding algorithm includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is

different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.

6. The system as recited in claim 4 wherein

each one of the switching elements is a routing cell,

the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types wherein each one of the packet types corresponds to a distinct in-band control signal, and

the encoder includes means for coding each of the in-band control signals by at least two bits and the coding algorithm includes coding the bits such that the first bit of the code for the in-band control signal corresponding to a 0-bound packet type is different from the first bit of the code for the in-band control signal corresponding to a 1-bound packet type.--.